

Public Comment on FCC Notice of Inquiry,
ET Docket No. 13-84.

September 3, 2013

Office of the Secretary
Federal Communications Commission
445 12th St. SW, Washington, DC 20554

Dear Secretary,

This comment is in response to the Federal Communications Commission request for public comments on whether it should revise its standards for human exposure to radio frequency radiation.

World Health Organization, US, EU & Other Government Positions on RFR

It is an undisputed fact that our federal authorities, the FDA & US Center for Device and Radiological Health,¹ EPA,² FCC,³ world renowned scientists and reputable health research groups,^{4,5,6,7} *all agree* that the current FCC/IEEE/ICNRP safety guidelines for non-ionizing, non-thermal type of radiofrequency radiation (RFR from wireless devices, only protects **adults** from **short term** radiation exposures that cause heating (thermal) of body tissue and **does not protect children or adults from long-term exposures or nonthermal effects** such as, cancer, degenerative diseases, heart irregularities, hormonal disruptions, childhood Leukemia, Parkinson, Multiple Sclerosis, Alzheimer, DNA damage, mutated and low sperm counts, Diabetes, or *any* other known forms of injury. These scientists, physicians, published experts, federal agencies, and health research groups also overwhelmingly call for lowering, or in the case of children & pregnant women, complete avoidance of exposures to the type of radiofrequency radiation from Smart Meters & Wi-Fi.

FCC Position:

The FCC is a **regulatory** agency (regulates radiation emissions), not a **health** agency and is not authorized by Congress to determine the health effects of RF upon our children. It is the FDA & EPA that have this responsibility. To further clarify their responsibilities as health agencies we would like to reference the official, published FCC document on this topic, the 1999 FCC OET Bulletin 56 entitled ***Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields***,⁸ page 27, that describes each of the official responsibilities of these agencies. The FDA is the official lead health agency with the authority & responsibility of advising all other federal agencies including the FCC on the health effects of RF and the EPA the secondary advisory position.

So even though the FCC is not an authorized health agency to make the determination regarding adverse health effects of RF, at some point they must have been officially advised by the FDA or EPA. In their 1999 report page 8, paragraph 3-5, the FCC stated their official position on the type of RFR from Smart Meters & Wi-Fi. At that time, **14 years ago**, this FCC Report states:

*More recently, other scientific laboratories in North America, Europe and elsewhere have reported certain biological effects after exposure of animals ("in vivo") and animal tissue ("in vitro") to relatively low levels of RF radiation. These reported effects have included certain changes in the immune system, neurological effects, behavioral effects, evidence for a link between microwave exposure and the action of certain drugs and compounds, a "calcium efflux" effect in brain tissue (exposed under very specific conditions), and effects on DNA. Some studies have also examined the possibility of a link between RF and microwave exposure and cancer. **Results to date (1999)** have been inconclusive... In general, while the possibility of "non-thermal" biological effects may exist, whether or not such effects might indicate a human health hazard is not presently known. **Further research is needed** to determine the generality of such effects and their possible relevance, if any, to human health.*

This 1999 report was the last time that the FCC stated their position on RFR in an officially recorded document and reflects their viewpoint after exploring the single question of whether RFR caused heating of body tissue and at what levels of exposure RFR would not cause heating. As indicated, by 1999 there were already many studies showing non-thermal adverse health effects from RF which had not been considered by the US agencies when enacting the 1996 FCC guidelines. In the last 13 years, more of the "further research" mentioned by this outdated report has taken place and is still underway. One such long-term study that is currently underway is the international MOBI-Kid⁹ study that is researching whether RF from the type of exposures from Smart Meters & Wi-Fi causes brain tumors in children (current research already shows a doubling of brain cancer rates in adults after 30 minutes of cell phone exposure per day for 10 yrs or more) and their web site states:

The incidence of these tumours in young people under 20 years of age has been increasing recently...So far, little is known about risk factors for brain tumours. Some factors (e.g. exposure to ionizing radiation) and family history of brain cancer are known to increase the risk of developing brain tumours. Other environmental factors (e.g., exposure to chemicals, nutrition during pregnancy or exposure to electromagnetic fields including cellular phone use) may be associated with brain tumours. With respect to the latter, the use of cellular phones and other communication technologies has increased dramatically over the last decade, especially in children and its role in the development of brain cancer in young people has yet to be studied.

Since the current studies already confirm RFR as harmful to adult humans and children are also humans, the only question that remains is how much more hazardous is it for children. Two other significant governmental studies currently underway specifically for RFR effects on children are SEAWIND, a project aimed at developing instrumentation and procedures for the accurate assessment of exposure to EMF at typical daily-life exposure scenarios and ARIMMORA,¹⁰ a project on possible biophysical interaction mechanisms that could clarify the existing association between residential exposure to extremely low frequency EMF and childhood Leukemia.

As you can see from these scientific studies, very large gaps of knowledge exist and even more serious adverse effects are **just now** being explored, leaving our children unnecessarily vulnerable to even more serious suspected health risk from daily, long term exposures from smart meters, cell phones, & Wi-Fi in addition to the well-documented adverse health effects already established by the current scientific studies.

Also since 1999, it was undisputed that the proper, authorized US health agencies, the FDA, US Center for Device and Radiological Health,¹¹ & EPA,¹² along with the FCC,¹³ world renowned scientists¹ and reputable health research groups,^{14,15,16,17} have reached a consensus and recognition that the FCC emission guidelines are limited, outdated and do not protect us from the adverse health effects from wireless smart meters, cell phones & Wi-Fi type RF radiation.

FDA Position:

In fact, in 2003 the FDA, *which is* the lead federal health authority designated by Congress to determine the health effects of RF radiation and to advise the FCC on emission guidelines,^{18,19,20,21,22} acknowledged the lack of adequate FCC safety guidelines along with the harm from the type of RF radiation from cell phones, smart meters, Wi-Fi and other wireless devices by nominating the US National Toxicology Program²³ to study and make a determination of the long term health effects of RF. As posted by the FDA/NTP on their 2010 online public fact sheet for this current study:

Current exposure guidelines are based largely on protection from acute injury from thermal effects; little is known about potential health effects of long-term exposure to radiofrequency radiation; and sufficient data from human studies may not be available for several years.

As of today, this study is still underway and not due for completion until 2014. So at this point in time, our governing US authority on the safety of RF has not yet completed its review of the health studies regarding the type of radiation from wireless smart meters, cell phones & Wi-Fi, i.e. long term exposures of non-ionizing, nonthermal radiofrequency radiation. This fact alone should warrant complete avoidance of RF from Smart Meters & Wi-fi, especially by our children.

Notwithstanding the FDA/NTP study on **long-term**, on-thermal effects, the FDA website at *Current Research Results*²⁴ does state that the weight of the evidence for **short-term** exposures of **adults** (children models not included in FCC guidelines) to RFR does not show excessive (thermal) heating of human tissue but does not discuss the non-thermal adverse health effects that have already been shown by the majority of current health studies. Needless to say, RFR exposures from cell phones are different from Smart Meters & Wi-Fi in that cell phone exposures are short term, voluntary, avoidable exposures as opposed to the constant, long term (24 hour per day for years) exposures from Smart Meters & Wi-Fi being forced on children in the public schools and libraries. In support of our viewpoint, the FDA goes on to state that;

*Still, there is consensus that additional research is warranted to address gaps in knowledge, such as the effects of cell phone use over the long-term and on pediatric populations.”*²⁵

The known non-thermal adverse health effects along with the gaps in knowledge in this research regarding children discussed by the FDA are exactly why we should not be exposing our children to RFR from smart meters or Wi-Fi. To further illustrate the significant “*gaps in knowledge and research*” noted by the FDA which are not taken

into consideration in the formulation of safe exposure levels by our current FCC guidelines, we point to the same reference for further research provided by the FDA on their web site under additional resources. The FDA list the 2008 National Academy of Sciences report – *Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication Devices*²⁶ (NAS Report) as their reference.

The FDA asked the US National Academy of Sciences to identify any inadequacies/gaps in the research upon which the current US radiofrequency radiation (RF) FCC guidelines are based and they identified the following gaps which relate specifically to our children's current exposure situation:

- 1) There is a need to characterize exposure of juveniles, children, pregnant women, and fetuses, both for personal wireless devices (e.g., cell phones, wireless personal computers, Wi-Fi and for RF fields from base station antennas) including gradients and variability of exposures, the environment in which devices are used, and exposures from other sources, multilateral exposures, and multiple exposure.*
- 2) Need research on variability of exposures to the actual use of the device, the environment in which it is used, and exposures from other sources.*
- 3) Need - Case control Studies of effects of RF fields in the development of childhood brain tumors in children and adolescents.*
- 4) Need research on Multilateral (many-sided) exposures.*
- 5) Need research on Multiple frequency exposures (consideration of simultaneous exposures from all different sources of RF).*
- 6) Need research on Exposure to pulsed radiofrequency radiation (pulsed is the type of radiation from Smart Meters & Wi-Fi).*
- 7) Need exposure Models for men and women of various heights and for children of various ages (current model used is a 6'2", 220 lb male, see reference #26).*
- 8) Need Prospective Cohort Studies of Pregnancy and Childhood. Children are potentially exposed from conception through the mother's use of wireless devices such as cordless phones, Wi-Fi, and other communications systems and then postnatally when they themselves become users of mobile phones.*
- 9) Need research - Presently, there is negligible or relatively little knowledge of local SAR concentration (and likely heating) from RF exposure in close proximity to metallic adornments and implanted medical devices for the human body including metal rim glasses, earrings, and various prostheses (e.g. children's ortho braces, hearing aids, cochlear implants, cardiac pacemakers, insulin pumps, Deep Brain Stimulators).*
- 10) Need sufficiently long exposure research and follow-up to allow for detection of effects that occur with a latency of several years.*
- 11) Need research on information concerning the health effects associated with living in close proximity to base stations.*
- 12) Need research that includes children, the elderly, and people with existing underlying diseases.*
- 13) Need research on possible adverse RF effects identified by changes in EEG (electroencephalogram) activity.*
- 14) Need research on possible neurophysiologic effects developing during long-term exposure to RF fields.*

- 15) Need studies focusing on possible adverse RF effects identified by changes in cognitive performance functions.*
- 16) Need studies for Effects of RF exposure to the sensitive biological targets of neural networks.*
- 17) Need studies on possible influences of exposure on the structure and function of the immune system, including prenatal, neonatal, and juvenile exposures.*
- 18) Need studies on possible influences of RF exposures on the structure and function of the central nervous system, including prenatal, neonatal, and juvenile exposures.*

Clearly, from this extensive list, the 2008 NAS Report did indeed find numerous, significant gaps in the current guidelines and indicates to us that there are many more suspected adverse health effects still being investigated regarding children, in addition to the existing nonthermal adverse health effects already established by the science. These numerous and significant gaps in knowledge have not been taken into consideration in formulating the current FCC emission guidelines, nor have they previously been taken into consideration by our town officials or school boards before allowing the use of cell phones in schools or when installing smart meters & Wi-Fi.

This void in knowledge is substantial and could directly affect the outcome of our school children's health. For instance, how many kids in our school wear orthodontic braces? Are they being exposed to even greater harm by the reflective properties of RFR exposure on metal due to the use of cell phones, smart Meters and Wi-Fi in the schools? Why are we experimenting with our children since science does not know one way or the other. Science tells us that other types of radio waves can be received by the orthodontic braces in the mouths of children and also that due to the reflective properties of RF, energy is bounced off the metal braces and can be concentrated into dangerous hotspots in human tissue, but we don't know if continuous exposure results in harmful heating of mouth tissue or if the RF is reflected into the brain to cause heat or other nonthermal damage to brain tissue (see No. 9 gap on NAS Report, above).

The FDA is not the only national health agency to point out these and other huge gaps in knowledge that have not been incorporated or assessed by the FCC/IEEE/ICNRP/OSHA safety guidelines. The World Health Organization, the EPA, and the EU's SCENIHR (please see sections below) have also identified and listed serious gaps in knowledge related to health effects of RF on children's health.

EPA Position:

The US secondary health authority on RFR, the EPA also concurs that the current RF safety guidelines for the type of exposure from Smart Meters & Wi-Fi are outdated and inadequate as stated in their 2002 advisory letter²⁷ the

FCC's current exposure guidelines as well as those by the IEEE and the ICNRP, are thermally based and do not apply to chronic, nonthermal exposure situations... FCC does not claim that their exposure guidelines provide protection for exposures that are chronic/prolonged and non-thermal.

In addition, the EPA stated in this same advisory letter that:

Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, nonthermal exposures. Incorporating information on exposure scenarios involving repeated short duration nonthermal exposures that may continue over very long periods of time (years), with an exposed population that includes children, the elderly, and people with various debilitating physical and medical conditions, could be beneficial in delineating appropriate protective exposure guidelines.

So, when the EPA, FDA and other agencies' state that RFR levels that meet FCC/IEEE/ICNRP/OSHA guidelines do not cause adverse health effects, they are only referring to adverse health effects **from one type of exposure, i.e. short term exposures, to only one type of injury i.e. excessive heating of body tissue** and to **only one human model, i.e. an Adult male**²⁸ and not to the types of exposures incurred by our children from cell phones, smart Meters & Wi-Fi. This is because at the time the guidelines were enacted (1996, 1991, & 1998 based on 1984 science), scientist believed that RFR could only cause injury by heating body tissue, therefore no other forms of injury were even explored and also at that time, it had not been established that children's growing bodies are more vulnerable to disease, toxins & injury than adults, so children were not even considered.

World Health Organization's Position:

Along with classifying RF as a possible human carcinogen, the World Health Organization also recognized and confirmed in their *2010 WHO Research Agenda for Radiofrequency Fields*²⁹ the current serious gaps in knowledge and the "High Priority" need for long term research investigating the health effects of RF on children and adolescents:

High-priority research needs

- *Prospective cohort studies of children and adolescents with outcomes including behavioural and neurological disorders and cancer*

Rationale: As yet, little research has been conducted in children and adolescents and it is still an open question whether children are more susceptible to RF EMF since the brain continues to develop during childhood and adolescence. Also, children are starting to use mobile phones at a younger age.

- *Further RF EMF provocation studies on children of different ages*

Rationale: Current research has focused primarily on adolescents; very little is known about possible effects in younger children. Longitudinal testing at different ages, for example by studying children already participating in current cohort studies, is recommended.

- *Effects of early-life and prenatal RF exposure on development and behaviour*

Rationale: There is still a paucity of information concerning the effects of prenatal and early life exposure to RF EMF on subsequent development and behaviour. Such studies are regarded as important because of the widespread use of mobile phones by children and the increasing exposure to other RF sources such as wireless local area networks (WLAN s) and the reported effects of RF EMF on the adult EEG. Further study is required which should include partial (head only) exposure to mobile phones at relatively high specific absorption rate (SAR) levels.

Other research needs

- *Effects of RF exposure on reproductive organs*

Rationale: The available data concerning possible effects of RF EMF from mobile phones on male fertility are inconsistent and their quality and exposure assessments are weak. In vivo studies on fertility should consider effects on both males and females and investigate a range of relevant endpoints including RF EMF effects on the development and function of the endocrine system.

And from their prior **2006 WHO Research Agenda for Radiofrequency**³⁰:

High priority research needs:

• If ethical approval can be obtained, acute effects on cognition and EEGs should also be investigated in children exposed to RF fields in the laboratory.

Rationale: Possible RF effects on children were specifically raised by the UK's Independent Expert Group on Mobile Telephones (IEGMP, 2000) and the Istanbul WHO workshop (Kheifets et al. Pediatrics. 2005 116: 303-313). Cognitive effects are a priority research area in RF studies. However there are only a few results concerning RF effects on children.

Clearly, the World Health Organization also does not know much about how RFR affects children, further undisputable proof that our children are being subjected to an experiment and an unknown outcome that may have serious health consequences for our children.

European Union's (EU) Position:

The European Union's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) was asked to provide a report to the EU on the high priority gaps in research of the long term effects of Smart Meters/Wi-Fi type RF. The resulting 2009 report, ***Research Needs And Methodology To Address The Remaining Knowledge Gaps On The Potential Health Effects Of EMF***,³¹ Section 4.1.1.2. ***Health effects of RF fields from wireless communication in children*** describes one of the high priority gaps in research and the study needed as,

Study type

Interdisciplinary research including DOSIMETRY, EPIDEMIOLOGY, and ANIMAL STUDIES.

Rationale/justification

Children are exposed to RF fields from mobile telecommunications equipment earlier and thus have longer life-time exposure than present day adults. They may also be more susceptible than adults due to anatomical and morphological differences and as they are exposed during development. Available and ongoing research is mainly limited to case control studies on childhood brain tumours. Hardly any research has been done on the effects of exposure to EMF on the development of the central nervous system, on cognitive functions in children, and on behaviour. More data are also needed on children younger than those who have been studied to date. Animal experiments on early brain and behaviour development can answer some of the questions related to effects on children. (Emphasis added)

Another ongoing study funded by the European Union (EU) in 2009 and conducted by a consortium of eight organizations from five European countries: Belgium, Denmark, Germany, Greece and Switzerland, has released the first of the two part study for the ***Sound Exposure & Risk Assessment of Wireless Network Devices (SEAWIND)***³² project. **Section 3.4.2** concluded that,

Several recent numerical studies with both scaled and anatomical models of children exposed to plane wave radiation [62]-[69] have revealed that the ICNIRP reference levels are not conservative in the GHz range, i.e. the whole body averaged SAR basic restriction of 0.08 W/kg is exceeded. Of great interest is the work of Dimbylow et al. [64] with the University of Florida newborn voxel phantom. This shows that the basic restriction whole body SAR is breached for the ICNIRP reference levels in a wide range of frequencies (700 to 2450 MHz). Concerning pregnant women, several numerical studies with both simplified and realistic fetal and embryonic...Moreover, realistic models at different gestational ages are needed.

As previously explained, the FCC/IEEE/OSHA guidelines are based on the ICNIRP guidelines, which are what Wi-Fi exposure levels in our public schools must adhere to. As the 2009 release of the SEAWIND study has revealed, the current guidelines do not even protect children from the single injury they were created to protect from, i.e. excessive heating of body tissue from short term exposures! This European government study specifically concludes that the current guidelines safety levels for whole body exposure to 2.4 GHz (equals 2450 MHz), same frequency of some cell phones, wireless smart meters & Wi-Fi in our schools, does not protect our children from dangerous thermal heating of body tissues at even short term exposures so needless to say, longer term exposures will cause even more harmful thermal heating along with the non-thermal adverse health effects!

The European Union is the governmental agency representing most of Europe, and clearly recognizes the existing limitations of the safety guidelines to protect our children from RFR but unlike the US, the EU has already taken positive steps to avoid harm to children by adopting the national Resolution 1815 (see next section) that calls for all schools & libraries to use hardwired Internet access instead of Wi-Fi. Yet, another confirmation that indicates that it is common knowledge around the world that RF from Smart Meters & Wi-Fi causes harm to our children and that we should follow Europe's lead and also remove them from our schools and public places.

Other Nation's Government Positions on RF:

Canada Health and the US are the only two government health agencies that I am aware of *that have not* adopted a national resolution that calls for complete avoidance regarding exposure of children and pregnant women to cell phone, wireless smart meters & Wi-Fi type RFR exposures. Many other foreign governmental entities have made assessments having looked at the same body of scientific evidence, or **lack of studies** in the case of children's & pregnant women's exposures to RF, and concluded that a national protection policy was necessary.

- On July 5, 2013 the **Supreme Court of India** upheld the November 27, 2012 High Court of the state of Rajasthan decision to order the removal of all cell towers from the vicinity of schools, colleges, hospitals and playgrounds because of radiation "hazardous to life." The court's 200-page decision³³ thoroughly reviews the worldwide evidence that cell towers are harming human beings and wildlife.
- In 2011, the **Council of Europe composed of 47 member nations, including the UK, France, Germany, Italy, Ireland, Sweden and Spain**, voted to adopt Resolution 1815 which calls for all their schools to give preference to wired Internet connections and strictly regulating the use of cell phones on school premises (section

8.3.2): <http://www.assembly.coe.int/Mainf.asp?link=/Documents/AdoptedText/ta11/ERES1815.htm>

- In 2009, the **Brazilian Health Ministry**, adopted the Precautionary Principal which recommends that children under 16 not use devices that use radiofrequency and that schools & daycares not use Wi-Fi:
http://www.icems.eu/docs/resolutions/Porto_Alegre_Resolution.pdf
- 2005 **Salzburg Region Public Health Department, Austria** banned Wi-Fi in schools and nurseries:
http://bemri.org/publications/biological-effects-of-non-ionizing-radiation/wifi-and-dect/doc_view/136-advisory-letter-to-schools-re-dect-and-wifi.raw?tmpl=component
- Also in 2011, the **Russian National Committee on Non-Ionizing Radiation Protection (RNCNIRP)** passed a Resolution to protect children, teenagers and pregnant women and recommended that children under the age of 18 and pregnant women not use mobile phones due to the current body of evidence indicating adverse health effects. http://iemfa.org/images/pdf/RNCNIRP_Resolution_2011.pdf
- In 2012 the Department of Epidemiology, Biostatistics, and HTA, Radboud University Nijmegen Medical Centre, Nijmegen of the **Netherlands** published a study in the International Journal of Cancer which recommended reducing exposure of children to all sources of EMF citing that increased exposure may result in an increased risk of childhood leukemia.³⁴
- **Switzerland, China, Hungary and Poland** also all have stricter guidelines than Canada & the US. Their guidelines are stricter because they are not solely being based on heating of the body. They also include consideration of other biological, such as changes in calcium flux, changes in the permeability of the blood-brain barrier and damage to DNA.
- In 2010, the **government of Switzerland** with Swisscom, its largest telcom provider, offered fibre-optic wiring to schools for free for conversion from Wi-Fi to hardwiring networks.
- In 2007, **Germany's Federal Government** issued a national warning: Avoid exposure to radiation emanating from WiFi in cafés, schools, public "hot spots", and private homes and recommended that people should keep their exposure to radiation from Wi-Fi "as low as possible."
http://www.icems.eu/docs/deutscher_bundestag.pdf; <http://www.independent.co.uk/environment/green-living/germany-warns-citizens-to-avoid-using-wifi-401845.html>
- In 2010, **the Israel Government's** Official Position Paper on Electromagnetic Radiation in a School Environment instructs the education system, as a matter of principle, to give preference to existing technologies that are relatively safe and simple, such as the use of wired systems instead of using WLAN and WiFi :
<http://www.disconnectbook.com/2011/03/07/position-paper-on-electromagnetic-radiation-in-a-school-environment/>

- Also in 2011, a panel of prestigious, international scientist, from **Norway, Israel, USA, Sweden, Russia & Greece** issued the *The Selentum Statement*, calling for urgently needed stricter, safer public world safety standards for the type of radiofrequency radiation from Smart Meters & Wi-Fi:
<http://www.scribd.com/doc/48148346/Karolinska-Institute-Press-Release>,
http://iemfa.org/images/pdf/SELETUN_statement.pdf

Other US Entities & Research Group's Scientific Positions on RFR harm

Research into health effects of radiofrequency radiation has been going on for over seventy years. In 1971, the Navy Medical Research Institute published a bibliography of over 2,000 studies finding biological health effects from RF going back to the 1930s.³⁵ Among the health effects caused by low level RF (like the kind from Smart Meters & Wi-Fi) found in the Navy's comprehensive report were central, peripheral, & autonomic nervous system disruptions, blood disorders, and many physiologic function problems.

Why has our government been so slow to assess RFR and why are study results still so controversial? In essence, while the research groups **funded by the wireless industry**^{36,37,38,39,40,41,42,43,44} previously claimed they could not duplicate the results of some of the older non-industry funded health studies, most current **non-industry funded studies**⁴⁵ have found serious adverse health effects from RF radiation exposures to wireless devices like Smart Meters & Wi-Fi.

The type of radiation emissions from Smart Meters & Wi-Fi, i.e. long term exposure to continuous, non-thermal, non-ionizing radiofrequency (RF) radiation, has been shown to have adverse health effects at levels far below the emission safety guidelines limits and for even short term exposures. Just a few of the more recent prestigious reviews of all existing studies to date are discussed below and all have concluded there is overwhelming number of health studies showing adverse health effects to warrant complete preclusion for children and pregnant women.

In 2012, the distinguished **American Academy of Environmental Medicine**⁴⁶ issued a position paper opposing the installation of wireless "smart meters," based on the "*scientific assessment of the current medical literature*" and state that:

Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action..... existing FCC guidelines for RF safety that have been used to justify installation of "smart meters" only look at thermal tissue damage and are obsolete, since many modern studies show metabolic and genomic damage from RF and ELF exposures below the level of intensity which heats tissues.

The American Academy of Environmental Medicine was founded in 1965, and is an international association of prestigious physician specialists in the field of environmental medicine and other professionals which provides research and education in the recognition, treatment and prevention of illnesses induced by exposures to biological and chemical agents encountered in air, food and water. The founders and members of the American Academy of Environmental Medicine are recognized as the first to describe and acknowledge Gulf War Syndrome.

Also in to 2012, another prestigious group, **Environment and Human Health, Inc. (EHHI)**,⁴⁷ a nonprofit organization dedicated to protecting human health from environmental harms through research, education and the promotion of sound public policy recommended *everyone* reduce their exposure to wireless RF radiation due to the adverse health effects and that the federal government immediately “***evaluate cumulative exposure levels to radiofrequency radiation in pregnant women and children***” in order to avoid harm. EHHI is made up of doctors, public health professionals and policy experts committed to the reduction of environmental health risks to individuals.

Currently on the board of EHHI are **Susan Addiss, MPH**, past Commissioner of Health for the State of Connecticut, past President of the American Public Health Association and current member of the Pew Environmental Health Commission; **Robert G. LaCamera, MD**, the Clinical Professor of Pediatrics, Yale University School of Medicine and Primary Care Pediatrician in New Haven, Connecticut from 1956 to 1996 with a sub-specialty in children with disabilities; **Hugh S. Taylor, MD**, Chief of the Division of Reproductive Endocrinology and Infertility at Yale University School of Medicine and an Associate Professor, Department of Obstetrics, Gynecology and Reproductive Sciences and Department of Molecular, Cellular and Developmental Biology; **David R. Brown, Sc.D.**, Public Health Toxicologist and Director of Public Health Toxicology for Environment and Human Health, Inc., also past Chief of Environmental Epidemiology and Occupational Health in CT and previously Associate Professor of Toxicology at Northeastern College of Pharmacy and Allied Health; **Mark R. Cullen, MD** currently Professor of Medicine and Public Health, Yale University School of Medicine, also Director of Yale's Occupational and Environmental Medicine Program and co-editor of the Textbook of Clinical Occupational and Environmental Medicine; **John P. Wargo, PhD** is Professor of Risk Analysis and Environmental Policy at Yale University's School of Forestry and Environmental Studies, and a Professor of Political Science, also the Director of the Yale Program on Environment and Health and author of *Our Children's Toxic Legacy*, which won the American Association Publisher's competition as best scholarly and professional book in an area of government and political science in 1997. Founded in 1997, the EHHI has affected state policy, and, in some instances, national policy, by their research, education, and written reports.

Another current, peer-reviewed, study published in 2012 was conducted by the University Of California Department Of Epidemiology⁴⁸ and just confirmed results from many other studies that concluded exposures to low level RF like the kind from cell phones, wireless smart meters & Wi-Fi cause's behavioral problems in children.

In 2010, in a peer-reviewed, published, comprehensive review of ***all*** the published health studies to date, Blake Levitt & Professor Lai, surmised that *there are enough health studies* showing serious adverse health effects to conclude that new FCC emission exposure safety limits *are needed now*; that children are especially vulnerable; and that everyone should limit or completely eliminate their exposures to the type of radiation from these devices.⁴⁹

In 2009, two more recent peer-reviewed, published reviews of the health studies in Pathophysiology,^{50,51} the first by by Dr. Blank and Dr. Goodman from Columbia University, NY and the second by Cindy Sage and Dr. David Carpenter who is currently the Director of the Institute for Health & the Environment and Professor of Environmental Health Sciences of at the University of Albany, NY and was formerly the Director of the Wadsworth Center Laboratories & Research for the New York State Department of Health. The reviews looked at over 1,500 health studies and found FCC safety standards to be inadequate to protect us from RF with serious adverse health effects to children and fetuses from RF exposure at levels far below the current guideline limits.⁵²

Also in 2009, the Environmental Working Group, a well respected non-profit research group of scientists, engineers, policy experts, lawyers and computer programmers, pored over government data, legal documents, including data from more than 200 peer-reviewed health studies, government advisories, and industry documents to complete the Science Review on *Cancer Risks and Children's Health*, a comprehensive, 10-month science evaluation of the hazards of the type of RF radiation from cell phones (same type as from Smart Meters & Wi-Fi) and concluded that our children are more vulnerable to the adverse health effects from this type of radiation, due to their immature body structure and again concluded that studies show adverse health effects at lower levels which are not covered by FCC guidelines.⁵³

In 2007 and 2012, comprehensive reviews by the BioInitiative Working Group, an international collaboration of prestigious scientists and public health experts from Columbia University, the University of Washington, the Department of Neuroscience, Karolinska Institute, the Department of Oncology, Orebro Hospital (Sweden), the European Environmental Agency, the Medical University of Vienna (Austria) and Zhejiang University School of Medicine (China) released a reports citing 2,000 studies documenting health effects from EMFs and RF. Among the overall conclusions of these reports was that RFR may be considered genotoxic (cause DNA damage) and that the DNA damage occurs at levels of RFR that are far below the current safety limits, resulting in gene defects being passed down to the next generation.⁵⁴

The Maine CDC, not a congressionally designated government authority on this issue and also admitted they were not experts,⁵⁵ completed a limited review of just a few of the available, short term exposure health studies given to them by the profit motivated utility⁵⁶ to assess the RF from smart meters, of which they later declared did not prove the meters were “safe.”⁵⁷ The Maine CDC did not perform their own health study to determine the adverse health effects of RF but relied on the few studies given to them by the utility company. Subsequently, the Maine Public Utilities Commission stated the CDC’s finding of “no conclusive evidence of adverse health effects from RF” from smart meters was not “definitive” (not authoritative).⁵⁸ In 2011, the Maine Supreme Judicial Court chastised the Maine Public Utilities Commission for not even conducting an investigation of the health effects of RFR and ordered the MPUC to reopen the case and investigate the adverse health effects.⁵⁹

Unlike the Maine CDC, another *state* health agency that has completed an official, comprehensive review of *all* the adult health studies, the County of Santa Cruz, California, Division of Public Health (on January 13, 2012), reached a completely different conclusion. In so deciding, the Santa Cruz Division of Public Health joins the majority of the scientific community with its conclusions that the FCC guidelines are not protective from RF from wireless devices; safe exposure levels of RF are still unknown; a substantial number of studies show adverse, non-thermal health effects; and specifically recommends that hardwired Internet be used instead of Wi-Fi.⁶⁰

Also, unlike the Maine CDC, based upon recent studies, the Canadian British Columbia Centre for Disease Control (BC CDC) recommends that males keep cell phones away from the groin area and limit mobile phone use. The report confirms that there is consistent evidence that exposure to testes is associated with reduced sperm count, motility, concentration and altered cell structure. In its report, *A Radiofrequency Toolkit for Environmental Health Practitioners*⁶¹ released March 7, 2013, the BC CDC states that “the epidemiological studies of men assessed for infertility were consistent in demonstrating decreased sperm motility associated with increased use of mobile phones” and “biological effects on sperm motility related to RF exposure.”

Yet, another large US public health & safety group who has issued a position statement regarding public employees exposure to the same type of radiation as from Smart Meters & Wi-Fi, is the International Association of Fire Fighters Union - Division of Occupational Health, Safety & Medicine (includes the local chapters of the firemen unions in Maine) which states it is against exposing any firemen to radiofrequency from antennas located on any firehouse premises.⁶²

Finally, the American Red Cross, respected around the world, lists the following on their website as “*facts about cell phone radiation:*”

It has the potential to increase the number of sperm in men who use their phones extensively, to reduce to 30 percent.

Children under 16 years are advised not to use mobile phones unnecessary in England.

Insurance companies have clauses that payment of damages against the disease caused by the use of cell phones excluded.

Japan banned the use of mobile phones on trains because of radiation fears at second hand.

There is an increase of 300 percent of the likelihood that you will develop brain tumors and in tumors through the use of mobile phones, if you use it for more than 500 minutes in a month.

On average, a child uses the phone for over 2500 minutes in a month.

Because of the negative effects, every year there are 40,000 new cases of cancer of the eye or brain tumors.

GSM phones cause more damage than these phones based on CDMA networks.

The transmission towers for cellular phones emit radiation sufficient to increase heart risks like high blood pressure, tachycardia, cardiac arrhythmias, etc.

Mobile phone radiation has a direct impact on your hair.⁶³

Cell phones, smart meters and Wi-Fi have been rolled out at such a fast pace that most county and state health agencies have not yet completed a review or had time to investigate the *long term* health implications to the public or to our children. As previously discussed, none of the new (since 1999) short term, non-thermal studies or the current non-thermal long term studies have been reviewed by our federal government’s health agencies for inclusion into an updated safety guideline. Until the safety limits are established by our federal health authorities, the School Board & Town Officials cannot honestly say that children are not being harmed by the type of RF exposures from Smart Meters & Wi-Fi.

Adverse Health Effects of RFR

Some of the non-thermal adverse health effects found from these publications and many other recent reviews^{64,65,66} are very serious:

- Accumulating damage to eyes^{67,68,69,70}
- Increases in incidence of childhood Leukemia,^{71,72,73,74,75,76,77}
- 30% decrease in sperm count & sperm cell damage (recent 2012 studies of *the use of Laptop Computers connected to internet through Wi-Fi was found to decreases human sperm motility, increase DNA fragmentation, have toxic effects on growing rat testes, induce poor sperm quality and finally cause sperm apoptosis*)^{78,79,80,81,82,83,84,85,}
- Increased risk of Alzheimer^{86,87,88}

- Harmful Elevation of blood sugar in Diabetes⁸⁹
- Increase in toxins crossing the blood brain barrier^{90,91,92}
- Cell DNA damage that can be passed down to the next generation^{93,94,95,96,97,98,99,100}
- Drops in Melatonin levels, causing sleeplessness, depression, and Rapid aging^{101,102,103,104}
- Findings that children and pregnant women are more susceptible to the health effects^{105,106,107,108,109,110,111,112,113}
- Decreased attention, memory & motor skills & behavioural problems in children^{114,115,116,117,118,119}
- Decreases in calcium ion that leads to reduced immunity to all disease^{120,121}
- Increase in incidence of Parkinson^{122,123}
- Possible links to increases in incidence of Multiple Sclerosis^{124,125}
- Evidence that the damaging effects of RF radiation are cumulative^{126,127,128,129}
- And finally, elevated levels of brain,^{130,131,132,133} skin,^{134,135,136} breast,^{137,138,139,140,141} and testicular^{142,143,144,145,146,147} cancer.

From these credible, peer-reviewed, published reviews and studies we can undeniably deduce that RFR from cell phones, smart meters & Wi-Fi is causing health harm and behavioral problems in our children. Even if you choose to ignore the evidence, you cannot reasonably conclude that at the very least, there is a substantial and undeniable “risk” to our children’s health that can be avoided. Do we really want to take this kind of “risk” with our future and children’s health?

As expressed by the scientists in the BioInitiative Reports mentioned above,

What is missing with regard to EMF/RF has been an acknowledgement of the risk that is demonstrated by the scientific studies. ...in this case there is clear evidence of risk, although the magnitude of the risk is uncertain, and the magnitude of doing nothing on the health effects cost to society is similarly uncertain. This situation is very similar to our history of dealing with hazards of smoking decades ago, where power of the industry to influence governments and even conflicts of interest with the public health community, delayed action for more than a generation, with consequent loss of life and enormous extra health care costs to society.

Conclusion & Appeal to FCC

My family has requested that our public school board eliminate the use of wireless smart meters, WiFi and ban the use of cell phones in the schools but the school has refused pointing to their compliance with the outdated 1996 FCC guidelines. Consequently, children are saturated in RFR from wireless smart meters, WiFi antennas in practically every classroom, constant, daily use of wireless computers, a cell phone in every student’s pocket, and several antenna loaded cell towers within a mile of the school. We, as parents are helpless and cannot protect our children from the health risk of RFR at home or in public places.

If there was only one reputable, peer reviewed, published study showing adverse biological effects from exposure to RFR, we should not wait until additional studies confirm the findings, but should act immediately to protect our future and our children by using the precautionary principle, and eliminating the risk. The fact is there are

1,000s of peer-reviewed, published studies showing harmful biological effects from exposure to RFR and indisputable evidence of abundant and serious, substantial gaps in knowledge on how long-term, or even short term, RFR exposures affect the health of our children as shown by the 2010 & 2006 WHO research reports; the 2008 US National Academy of Sciences Report; the FDA's current National Toxicology Program study; the EPA advisories; the European Union (EU) 2009 *SEAWIND* project; and the EU's 2009 SCHENIHR knowledge gaps report.

By any reasonable person standard, it cannot reasonably be asserted that current FCC safety guidelines protect our children from harm from nonthermal or even thermal exposures to RFR nor can it be asserted that our children are not currently being harmed by RFR exposures from cell phones, smart meters & Wi-Fi in our public buildings and in fact the only conclusion that can be reached is that our children and fetuses are at risk of serious health consequences from exposure to a class 2-B human carcinogen.

In conclusion, I feel the FCC should immediately revise their guidelines for human exposure to radio frequency radiation to be more restrictive for everyone and include the following provisions:

- A. children and pregnant women should completely avoid exposure to RFR from all wireless devices;
- B. Wireless devices emitting RFR should be eliminated from all public buildings (public building should use wired or fiber optics for internet connection, smart meters and phones).

Respectfully submitted,

Dianne Wilkins

¹ <http://ntp.niehs.nih.gov/?objectid=7E733ABE-BDB5-82F8-FBDC3F58CoCEE928> - click on left column "Fact Sheet" to see the FDA's US National Toxicology Program's current study on non-thermal RF Radiation (like the kind from smart meters) not due for completion until 2014!
http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf:

² http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf: The 2002 advisory ltr. from the EPA states the "**FCC's current exposure guidelines as well as those by the IEEE and the ICNRP, are thermally based and do not apply to chronic, nonthermal exposure situations**" (type from cell phones, smart meters and WiFi).

³ http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf: The 2002 advisory ltr. from the EPA also states that the "**FCC does not claim that their exposure guidelines provide protection for exposures that are chronic/prolonged and non-thermal.**"

⁴ <http://electromagnetichealth.org/quotes-from-experts/> -Expressions of Concern from Scientists, Physicians, Health Policy Experts & Others

⁵ <http://iemfa.org/index.php/publications> - International Publications Calling for RF recall

⁶ <http://iemfa.org/index.php/appeals> -International Doctors and Scientist Warnings against EMF

⁷ [http://www.pathophysiologyjournal.com/article/S0928-4680\(09\)00017-0/abstract](http://www.pathophysiologyjournal.com/article/S0928-4680(09)00017-0/abstract) - peer reviewed, published acknowledgement

⁸ [oet56e4.pdf](#): FCC OET Bulletin 56, page 27, last sentence, second paragraph which states “**The FDA is, however, the lead federal health agency in monitoring the latest research developments and advising other agencies with respect to the safety of RF-emitting products used by the public...**”

⁹ <http://www.mbkds.com/news/press-release-11052009>

¹⁰ http://ec.europa.eu/health/electromagnetic_fields/docs/fp7_arimmora.pdf

¹¹ <http://ntp.niehs.nih.gov/?objectid=7E733ABE-BDB5-82F8-FBDC3F58CoCEE928> - click on left column "Fact Sheet" to see the FDA's US National Toxicology Program's current study on non-thermal RF Radiation (like the kind from smart meters) not due for completion until 2014!

¹² http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf: The 2002 advisory ltr. from the EPA states the “**FCC’s current exposure guidelines as well as those by the IEEE and the ICNRP, are thermally based and do not apply to chronic, nonthermal exposure situations**” and does not protect us from long term exposure from the nonthermal type of RF radiation (type from cell phones, smart meters and WiFi).

¹³ http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf: The 2002 advisory ltr. from the EPA also states that the “**FCC does not claim that their exposure guidelines provide protection for exposures that are chronic/prolonged and non-thermal**” like the kind from WiFi.

¹⁴ <http://electromagnetichealth.org/quotes-from-experts/> -Expressions of Concern from Scientists, Physicians, Health Policy Experts & Others

¹⁵ <http://iemfa.org/index.php/publications> - International Publications Calling for RF recall

¹⁶ <http://iemfa.org/index.php/appeals> -International Doctors and Scientist Warnings against EMF

¹⁷ [http://www.pathophysiologyjournal.com/article/S0928-4680\(09\)00017-0/abstract](http://www.pathophysiologyjournal.com/article/S0928-4680(09)00017-0/abstract) - peer reviewed, published acknowledgement

¹⁸ [oet56e4.pdf](#): FCC OET Bulletin 56, page 27, last sentence, second paragraph which states “**The FDA is, however, the lead federal health agency in monitoring the latest research developments and advising other agencies with respect to the safety of RF-emitting products used by the public...**”

¹⁹ <http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/Overview/ClassifyYourDevice/ucm051504.htm>: See "Introduction" on first page which states the FDA regulates emitting RF emitting electronic products & their purpose is to prevent unnecessary exposure etc. & on the second page, number 7 on the list, states one of the products is “**radio and low frequency power generation and transmission equipment**”

²⁰ <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm>; See under "Federal Communications Commission", first sentence “**The FDA shares regulatory responsibilities for cell phones with the FCC. FCC certifies wireless devices, and all phones that are sold in the US must comply with FCC guidelines on RF exposure. FCC relies on the FDA and other health agencies on health and safety related questions about cell phones**”

²¹ <http://www.fda.gov/Radiation-EmittingProducts/FDARadiologicalHealthProgram/default.htm>; See first sentence “**FDA’s radiological health program is to protect etc...from RF...**”

²² <http://www.fda.gov/Radiation-EmittingProducts/ElectronicProductRadiationControlProgram/GettingaProducttoMarket/default.htm#1>; See Q2.A, second sentence that states “**for most electronic products, safety regulations is divided between CDRH/FDA and state regulatory agencies. CDRH/FDA regulates the manufacture of the products, and the states regulate the use of the products.**”

See Q3.A, CDRH is a component of the FDA.

See Q5.A, regarding radiation **safety of RF**, the EPA is responsible for issuing **general** radiation guidance to other Federal agencies

²³ <http://ntp.niehs.nih.gov/?objectid=7E733ABE-BDB5-82F8-FBDC3F58CoCEE928> - click on left column "Fact Sheet" to see the FDA's US National Toxicology Program's current study on non-thermal RF Radiation (like the kind from smart meters) not due for completion until 2014!

²⁴ FDA statement from website “**Still, there is consensus that additional research is warranted to address gaps in knowledge, such as the effects of cell phone use over the long-term and on pediatric populations.**” <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm>

²⁵ FDA statement “**Still, there is consensus that additional research is warranted to address gaps in knowledge, such as the effects of cell phone use over the long-term and on pediatric populations.**” <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm>

²⁶ Ctrl & Right Click mouse on this web link: www.nap.edu/catalog.php?record_id=12036

²⁷ The 2002 advisory ltr. from the EPA states the “**FCC’s current exposure guidelines as well as those by the IEEE and the ICNRP, are thermally based and do not apply to chronic, nonthermal exposure situations**” and also that the “**FCC does not claim that their exposure guidelines provide protection for exposures that are chronic/prolonged and non-thermal**”
http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf

²⁸ Om P. Gandhi¹, L. Lloyd Morgan², Alvaro Augusto de Salles³, Yueh-Ying Han⁴, Ronald B. Herberman^{2,5} & Devra Lee Davis²
Exposure Limits: The underestimation of absorbed cell phone radiation, especially in children, *Electromagnetic Biology and Medicine*, Early Online: 1–18, 2011 Copyright © Informa Healthcare USA, Inc. ISSN: 1536-8378 print / 1536-8386 online
DOI: 10.3109/15368378.2011.622827; “The existing cell phone certification process uses a plastic model of the head called the Specific Anthropomorphic Mannequin (SAM), representing the top 10% of U.S. military recruits in 1989 and greatly underestimating the Specific Absorption Rate (SAR) for typical mobile phone users, especially children. Radiofrequency (RF) exposure to a head smaller than SAM will absorb a relatively higher SAR. The SAR for a 10-year old is up to 153% higher than the SAR for the SAM model. When electrical properties are considered, a child’s head’s absorption can be over two times greater, and absorption of the skull’s bone marrow can be ten times greater than adults. The SAM Cell Phone Certification Process Specific Anthropomorphic Mannequin (SAM) is a plastic head mannequin (Beard and Kainz, 2004), based on the 90th percentile of 1989 United States military recruits (Gordon et al., 1989). While the exposure limit standard considered body sizes “from small infant to large adult,” (ANSI, 1982, p. 14) only a large adult male that weighed about 220 lb (100 kg) and was 6 foot 2 in (188 cm) in height was used for cell phone compliance testing.”

²⁹ **2010 WHO Research Agenda for Radiofrequency Fields:** http://whqlibdoc.who.int/publications/2010/9789241599948_eng.pdf

³⁰ **2006 WHO Research Agenda for Radiofrequency:** http://www.who.int/peh-emf/research/rf_research_agenda_2006.pdf

³¹ http://ec.europa.eu/health/ph_risk/committees/04_scenihp/docs/scenihp_o_024.Pdf

³² SEAWIND review and study on adverse health effects of WiFi type RF funded by the EU: <http://seawind-fp7.eu/deliverables-and-publications/> (open Deliverable 1.1)

³³ On July 5, 2013 the Supreme Court of India upheld the November 27, 2012 High Court of the state of Rajasthan decision to order the removal of all cell towers from the vicinity of schools, colleges, hospitals and playgrounds because of radiation “hazardous to life.” The court’s 200-page decision thoroughly reviews the worldwide evidence that cell towers are harming human beings and wildlife. It is available here:
<http://www.google.com/url?sa=t&rct=j&q=israni%20%22union%20of%20india%22%20%22high%20court%22%20rajasthan&source=web&cd=5&ved=oCD4QfJAE&url=http%3A%2Fwww.rtiindia.org%2Fforum%2Fattachments%2Fchit-chat%2F8595d1358495483-no-mobile-towers-near-schools-hospitals-directs-rajasthan-hc-no-mobile-towers-near-schools-hospitals-directs-rajasthan-high-court.pdf&ei=8oMeUq7ONMnkyQGJmYGwDA&usq=AFQjCNFCfNEmAnTRaTYhfxag1UQdZohJkg>

³⁴ Teepen JC, van Dijk JA, ‘**Impact of high electromagnetic field levels on childhood leukemia incidence**,’ *Int J Cancer* 2012 Aug 15;131(4):769-78. doi: 10.1002/ijc.27542. Epub 2012 Apr 12.

³⁵ Navy: Glaser, Zorach R., ‘**Bibliography of reported Biological Phenomena (Effects) and clinical Manifestations of Attributed to Microwave and Radio-Frequency Radiation**,’ Naval Medical Research Institute, Research Report MF 12.54.05-0004B, National Technical Information Service, US Dept. of Commerce, 1971

³⁶ Huss A, Egger M, Hug K, Huwiler-Müntener K, Rösli M Environ Health Perspect, ‘**Source of funding and results of studies of health effects of mobile phone use: systematic review of experimental studies**,’ 2007 Jan;115(1):1-4: <http://www.ncbi.nlm.nih.gov/pubmed/17366811>

³⁷ Hardell L, Walker MJ, Walhjalt B, Friedman LS, Richter ED, ‘**Secret ties to industry and conflicting interests in cancer research**,’ *Am J Ind Med*. 2007 Mar;50(3):227-33: <http://www.ncbi.nlm.nih.gov/pubmed/17086516>

³⁸ Bhandari M. et al, ‘**Association between industry funding and statistically significant pro-industry findings in medical and surgical randomized trials**’ *CMAJ*. 2004 Feb 17; 170(4): 477-80: <http://www.ncbi.nlm.nih.gov/pubmed/14970094>

³⁹ Dr. George L. Carlo, ‘**Illusion & Escape the Cell Phone Disease Quagmire are We Being Deceived?**,’ *The American Trial Lawyer*, 2008, Fall: 76-87

⁴⁰ Louis Slesin, ‘**Radiation Research and the Cult of Negative Results**,’ *Microwave News*, 2006 July; Vol. XXVI No. 4: 2-5: <http://www.microwavenews.com/docs/mwn.7-06.RR.pdf>

⁴¹ **Leading IARC expert Anders Ahlbom linked to the Telecom Industry**, by Mona Nilsson, an investigation journalist and Author, Sweden uncovered that Anders Ahlbom who was the chair of an expert group on epidemiology for the World Health Organization’s IARC evaluation of the carcinogenicity of mobile phone radiation, is also the cofounder of “Gunnar Ahlbom AB” a Brussels-based lobby firm aiming to assist the telecom industry on EU regulations, public affairs and corporate communications. RF was later only classified a 2-B possible carcinogen instead of a “probable carcinogen” as many scientist had recommended.

⁴² Published, peer-viewed study of bias in WHO research: www.avaate.org/IMG/pdf/Int_J_Mol_Med_2003_12_67.pdf

⁴³ The former head of the World Health Organization is Electrosensitive to EMF: http://www.mast-victims.org/resources/docs/The-Laughing-stock-and-pursuit-of-Gro_Plot-issue7.pdf

⁴⁴ What Corruption Looks Like: FCC Commissioner Takes Job At Comcast Months After She Voted To Approve Its Deal With NBC Universal: <http://csnbs.com/showthread.php?tid=496748>

⁴⁵ <http://www.icems.eu/papers.htm?f=/c/a/2009/12/15/MNHJ1B49KH.DTL> (click & read first part) & <http://www.justproveit.net/studies>, <http://www.powerwatch.org.uk/science/studies.asp>

⁴⁶ *"The Board of the American Academy of Environmental Medicine opposes the installation of wireless "smart meters" in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action."* <http://aaemonline.org/images/CaliforniaPublicUtilitiesCommission.pdf>

⁴⁷ http://www.ehhi.org/reports/cellphones/health_risks.shtml:

⁴⁸ Divan HA, Kheifets L, Obel C, Olsen J, **Cell phone use and behavioural problems in young children**, 2012 J Epidemiol Community Health. Jun;66(6):524-9. Epub 2010 Dec 7: <http://www.ncbi.nlm.nih.gov/pubmed/21138897>

⁴⁹ To read entire review go to www.EMRnetwork.org/news.htm, scroll down to second item dated November 26, 2010 and mouse click on "read the whole article" or go to link below to read a quick summary: http://www.nrcresearchpress.com/userimages/ContentEditor/1299523036517/ER_PressRelease_Nov52010_Final_e.pdf

⁵⁰ <http://smartmetersafetydotcom.files.wordpress.com/2010/11/pathophysiology-paper1.pdf>: "Research at the more energetic levels of power frequency [7]and in the RF [8] ranges has shown that exposure to EMF can lead to breaks in the DNA strands. Therefore, DNA can no longer be considered unaffected by environmental EMF levels. It can be activated and damaged by EMF at levels that are considered safe [9]"

⁵¹ www.ntia.doc.gov/legacy/broadbandgrants/comments/6E05.pdf 2009 published review of health studies by Cindy Sage and Dr. David Carpenter "Existing safety standards are obsolete because they are based solely on thermal effects from acute exposures. The rapidly expanding development of new wireless technologies and the long latency for the development of such serious diseases as brain cancers means that failure to take immediate action to reduce risks may result in an epidemic of potentially fatal diseases in the future. Regardless of whether or not the associations are causal, the strengths of the associations are sufficiently strong that in the opinion of the authors, taking action to reduce exposures is imperative, especially for the fetus and children."

⁵² See the footnote references for every single study in this comment that shows adverse health effects at levels below FCC guidelines.

⁵³ <http://www.ewg.org/cellphoneradiation/executivesummary> September 2009 — **Science Review on Cancer Risks and Children's Health**, Environmental Working Group's comprehensive, 10-month science evaluation of the hazards of cell phone radiation includes data from more than 200 peer-reviewed studies, government advisories, and industry documents

⁵⁴ Blackman, C., Blank, M. et al., **BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields**: <http://www.bioinitiative.org/freeaccess/report/index.htm>

⁵⁵ See Public Utilities Commission's Online Filings, Virtual Case File at http://mpuc.informe.org/easyfile/easyweb.php?func=easyweb_hitlist, type in Case ID # 2010345, go to page 33, see file document dated 12/30/10 which is a letter to the PUC from attorney Adam Taylor with attached e-mails (3rd attachment) from Andy Smith of DHHS to Dora Mills, then director of the CDC dated 11/12/10 stating "We are not experts on this, so are looking to people who we view as experts"

⁵⁶ See Public Utilities Commission's Online Filings, Virtual Case File at http://mpuc.informe.org/easyfile/easyweb.php?func=easyweb_hitlist, type in Case ID # 2010345, go to page 33, see filed document dated 12/30/10 which is a letter to the PUC from attorney Adam Taylor with attached e-mail (first attachment) from John Carol of CMP to Jay Hyland of CDC dated 11/19/10 transmitting the health and smart meter information from their utilities expert, Exponent "...should give you most of what your looking for." The few older health studies (7) in the Exponent report were the only health studies listed in the CDC's limited review of the research presented to the Maine PUC (all 7 studies were funded by the industry, and not independent) .

⁵⁷ See Public Utilities Commission's Online Filings, Virtual Case File at http://mpuc.informe.org/easyfile/easyweb.php?func=easyweb_hitlist, type in Case ID # 2010345, go to page 33, see file document dated 12/30/10 which is a letter to the PUC from attorney Adam Taylor with attached e-mail (2nd attachment) from Dora Mills to Chris Zukas-Lessard dated 10/15/10 stating that she never said the smart meters were "safe"

⁵⁸ See Public Utilities Commission's Live Audio at http://www.maine.gov/mpuc/news/calendar/live_audio.shtml , mouse-click on "Listen to Live Audio" box on far right of page, enter "viewer" as your "User ID", go to Deliberations dated 2/8/11 and mouse-click on arrow next to the date under column heading "Play," fast forward to case 2010-400

⁵⁹ Web-Link to oral arguments before the Maine Supreme Judicial Court on May 10, 2012 in the smart meter case before the Maine Supreme Court. Justices tell PUC/CMP that they ducked their duty to investigate the customers adverse health concerns, trespass, constitutional and privacy issues: <http://www.electrosmogprevention.org/?p=952>

⁶⁰ <http://emfsafetynetwork.org/wp-content/uploads/2009/11/Health-Risks-Associated-With-SmartMeters.pdf>: County of Santa Health Services Agency, Public Health Division, January 13, 2012 report on the health risks associated with wireless technology

⁶¹ British Columbia Centre for Disease Control (BCCDC) report, **A Radiofrequency Toolkit for Environmental Health Practitioners** released March 7, 2013, http://www.bccdc.ca/NR/rdonlyres/9AE4404B-67FF-411E-81B1-4DB75846BF2F/o/RadiofrequencyToolkit_v4_06132013.pdf

⁶² <http://www.iaff.org/hs/Facts/CellTowerFinal.asp>: International Association of Fire Fighters Union - Division of Occupational Health, Safety & Medicine (IAFF) which is against exposing any firemen to radiofrequency from antennas located on any firehouse premises, which includes local chapter of the firemen's unions in Michigan

⁶³ The American Red Cross list facts about RF: <http://www.americanredcrossncwv.org/interesting-facts-about-cell-phone-radiation>

⁶⁴ **Ecolog Report** & <http://www.icems.eu/papers.htm?f=/c/a/2009/12/15/MNHJ1B49KH.DTL> : Review of all health studies on RF up to the year 2000 by Mobile Telecommunications & Health

Also see attached pdf document for a 2010 study of Non-thermal Effects of RF published in European Journal of Oncology by Italy's National Institute for Study and Control of Cancer which states that all current safety guidelines for RF are not protective to us and recommends limiting exposure to all RF

⁶⁵ Johansson O., '**Disturbance of the immune system by electromagnetic fields – A potentially underlying cause of cellular damage and tissue repair reduction which could lead to disease and impairment**' *Pathophysiology*, 2009 Aug.: 157-77 Epub 2009 Apr 23: <http://www.ncbi.nlm.nih.gov/pubmed?term=johansson%20o.%2C%20Disturbances%20of%20the%20immune%2C%202009>

⁶⁶ Hardell L, Sage C., '**Biological effects from electromagnetic field exposure and public exposure standards**,' *Biomed Pharmacother.* 2008 Feb;62(2):104-9. Epub 2007 Dec 31: <http://www.ncbi.nlm.nih.gov/pubmed/18242044>

⁶⁷ Behrens T, Lynge E, Cree I, Sabroe S, Lutz JM, Afonso N, Eriksson M, Guénel P, Merletti F, Morales-Suarez-Varela M, Stengrevics A, Févotte J, Llopis-González A, Gorini G, Sharkova G, Hardell L, Ahrens W, '**Occupational exposure to electromagnetic fields and sex-differential risk of uveal melanoma**' *Occup Environ Med.* 2010 Nov;67(11):751-9. Epub 2010 Aug 25: <http://www.ncbi.nlm.nih.gov/pubmed/20798011>

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Sources: for IARC evaluation criteria: <<http://193.51.164.11/monoeval/eval.html>>; for lists of agents in each category: <<http://193.51.164.11/monoeval/crthall.html>>. For information on IARC, see: <www.iarc.fr>.